

Development of small-scale wood fuelled CHP technology (downdraft gasification)

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B9 Energy Biomass Ltd is a small renewable energy company based in Northern Ireland. The company was established following the introduction of market mechanisms for the development of renewable energy projects in the United Kingdom and Ireland. Since its establishment in 1995 the company has been developing innovative small scale conversion technology based on downdraft gasification of wood chips. Following a period of research, development and demonstration B9 Energy is now selling the equipment into the European market place. Wind energy is currently the most widely exploited renewable energy resource in the United Kingdom and Ireland, however it is widely recognised that Biomass, in particular short rotation coppice willow and forest residues will have a major part to play in increasing the current generating capacity to achieve the European objective of 10% electricity by 2010, (currently <3% in the UK).

The companies target market is small scale (<5MWe) wood fuelled projects operating in combined heat and power (CHP) mode. The company's conversion technology, based on downdraft gasification, is highly efficient with an overall conversion efficiency of 75%.

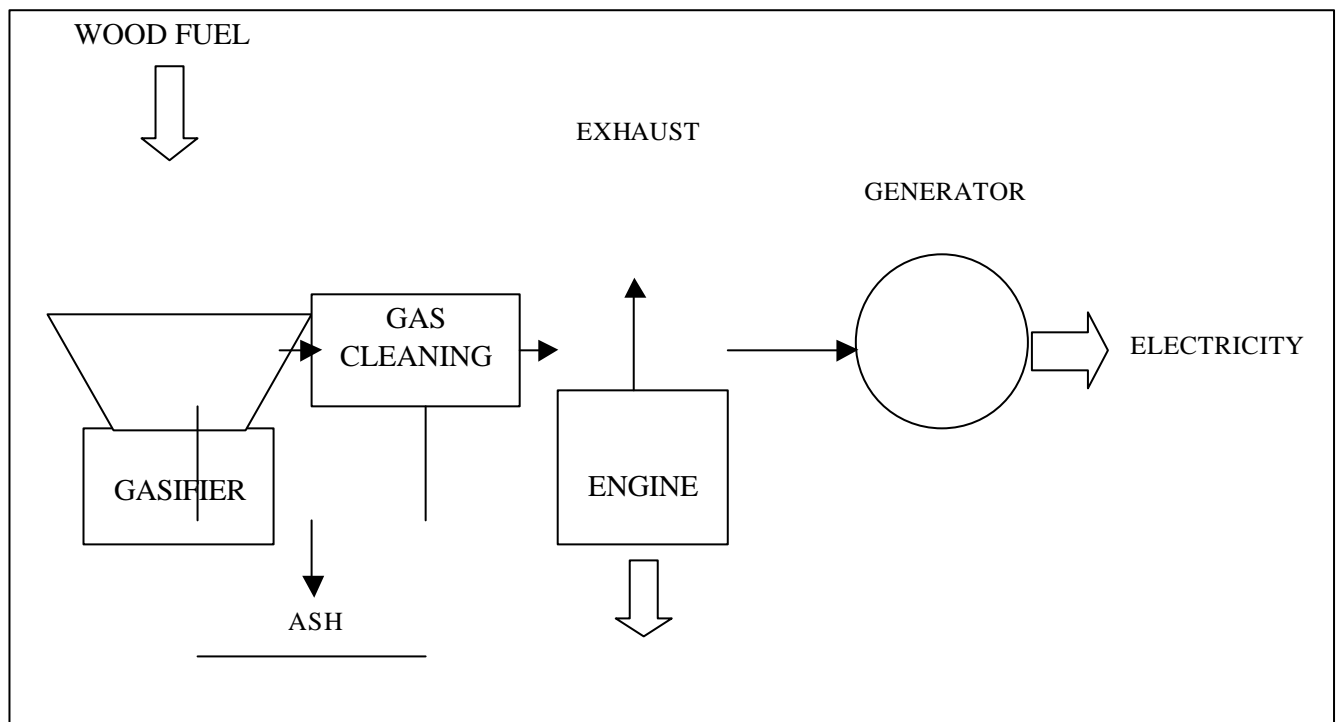


FIG 1.

B9 ENERGY DOWNDRAFT GASIFICATION OF WOOD FUEL

The technology following a period of development has been successfully demonstrated at the Blackwater Valley Museum in Northern Ireland. The demonstration plant has an installed capacity of 100 kWe, which is now being expanded to 200 kWe. Significant innovations in the design has resulted in a fully automated, zero liquid and zero tar waste project, the first of its type in the world. These factors are of major importance in ensuring economic viability at the small scale

Many technical and non technical barriers were encountered and overcome during the development and demonstration phases of this demonstration project. Following its success however the company is now also working on several other important projects.

?? Beddington ZED: London, United Kingdom. B9 Energy is installing a 130 kWe CHP unit to provide this sustainable housing development with all its heat and power requirements.

?? TRBDI: Tipperary, Republic of Ireland. B9 Energy is building a 300kWe demonstration CHP plant to supply the college's heat and power from sustainable resource. The college is involved in promoting rural and sustainable programmes. (EU Thermie Project).

?? Insch: Scotland, United Kingdom. B9 Energy has been selected to supply a 260 kWe unit which will provide heat and electricity for the local community's school, hospital, and nursing home.

The company's focus on developing innovative highly efficient technology is resulting in significant market opportunities opening up in supplying equipment to the building sector, green electricity sector and into industrial applications. A major expansion of the company is envisaged over the next 3 years.